

The Bonding Hypothesis Revisited: Do Cross-Listing Firms Bond to the Improved Disclosure Environment in the United States?

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Abstract

Doidge et al. (2004) find that firms originating from countries with a stronger investor protection mechanism are more likely to bond (i.e., cross-list) to the U.S. market because the cost of listing is likely to be lower. Interestingly, they also report that firms domiciled in a lower disclosure environment are more likely to bond, although the cost of bonding is likely to be higher for them relative to firms domiciled in a higher disclosure environment. We attempt to explain these seemingly inconsistent findings by focusing on the fact that only a subset of cross-listing firms – firms that cross-list on an organized exchange – incur the cost of complying with U.S. Generally Accepted Accounting Principles (GAAP): while firms cross-listing on an organized exchange are required to comply with U.S. GAAP, cross-listing firms that do not list on an exchange are exempt from this requirement. Consistent with our predictions, we observe bonding to the improved disclosure environment in the United States not in firms' cross-listing decisions but in their exchange-listing decisions: cross-listing firms from a lower (higher) disclosure regime are less (more) likely to exchange-list. We also conduct pricing tests which indicate that: (1) exchange-listing firms generally receive a higher valuation than non-exchange-listing firms; and (2) exchange-listing firms domiciled in a higher disclosure regime generally receive a higher valuation than exchange-listing firms from a lower-disclosure regime do, despite the fact that the cost of financial statement reconciliation is likely to be lower (higher) for the firms from a higher (lower) disclosure regime. Overall, the lower tendency of firms domiciled in a lower disclosure regime to list on an organized exchange appears to be consistent with the smaller net benefit they receive from the listing.

1. Introduction

The bonding hypothesis proposed by Coffee (2002) and supported by Doidge et al. (2004) suggests that firms voluntarily choose to list in the United States (i.e., bond) because of the benefits associated with such listing. Coffee (2002) defines bonding as the mechanism by which firms incorporated in a jurisdiction with weak protection of minority shareholders can voluntarily subject themselves to higher disclosure standards and stricter enforcements in order to attract investors who would otherwise discount stocks to reflect the risk of minority expropriation (and thus choose not to invest). He notes that bonding may occur either through the courts or through monitoring by reputational intermediaries such as U.S. underwriters, auditors, credit rating agencies, equity analysts, and stock exchanges. The main idea behind bonding is that a U.S. listing enhances investor protection and consequently reduces agency costs (Coffee 1999, 2002; Stulz 1999; Reese and Weisbach 2002).

Doidge et al. (2004) note that bonding and monitoring benefits exist because by listing in the United States, the costs of expropriation for large shareholders (who generally control foreign firms) increase, leading them to expropriate less from other investors. They further note that the gain to controlling shareholders from taking an action that commits them to less expropriation from other investors is a lower cost of capital, since the minority shareholders are less likely to see their investment expropriated. Confirming the bonding hypothesis, Doidge et al. (2004) document that (1) firms domiciled in a jurisdiction where investor protection is stronger are more likely to bond because the cross-listing cost is likely to be lower; and (2) there is a cross-listing

premium: Tobin's q 's for cross-listed firms are higher than those of non-cross-listed firms.

One intriguing finding reported by Doidge et al. (2004) is that firms from a weaker disclosure environment are more likely to cross-list, despite the fact that the cost of reconciling financial statements is likely to be higher for them compared with firms domiciled in higher disclosure regimes. This result, unlike their finding that firms from a stronger investor protection regime are more likely to cross-list, does not appear to be compatible with their bonding argument. If one applies the cost argument to the disclosure level in cross-listing firms' country of domicile, one would expect firms domiciled in a higher disclosure regime to be more likely to bond because the cost of meeting U.S. disclosure requirements is lower. Thus, the unaddressed issue is why firms from a lower disclosure regime are more likely to bond despite the higher cost of U.S. GAAP compliance they are likely to face relative to firms that cross-list from a higher disclosure regime.¹

In a recent discussion, Leuz (2003) argues that the main source of cross-listing benefits is not obvious and that the net benefit of bonding is difficult to assess.² In particular, he notes that it is not clear whether the cross-listing effect associated with an improvement in the firm's information environment derives from improved risk-sharing, increased disclosure, and/or stronger Securities and Exchange Commission (SEC) enforcement. On this note, he argues that studies that exploit the cross-sectional variation

¹ Throughout this study, we assume that U.S. GAAP is one of the most extensive disclosure requirements in the world and that the cost of compliance will decrease with the disclosure level in the firm's country of domicile: the more extensive the home country GAAP of a cross-listed firm is, the less costly the compliance will be (and thus more likely to cross-list on an exchange where the reconciliation is required), and vice versa.

² For instance, Lang et al. (2003) find that cross-listing in the United States generally improves a firm's information environment, and Doidge et al. (2004) find that cross-listing improves valuation.

in cross-listing effects are likely to add value to the literature. Thus, our goal in this study is to examine how the cost associated with meeting the U.S. reporting requirement affects bonding (i.e., cross-listing) firms' choice of listing mode and whether such choice relates to firm value.

Current U.S. regulatory requirements demand that foreign firms choosing to cross-list in the United States, and publicly trade on major exchanges (otherwise known as Level II and Level III American Depositary Receipts), comply with U.S. Generally Accepted Accounting Principles (U.S. GAAP), either by filing a 20-F reconciliation, under which firms must meet partial SEC disclosure requirements, or by filing 10-K reports.³ This requirement is often justified on the assumption that non-U.S. accounting and disclosure standards are not as stringent as U.S. GAAP. For instance, the Financial Accounting Standards Board (FASB) has argued that international standard-setters do not take all the necessary measures to stop reserve-accounting abuses, believed to be common in countries such as France, Italy, Sweden, and Germany (e.g., Jenkins 1995).⁴

As Biddle and Saudagaran (1989) and Saudagaran and Biddle (1992) note, the cost associated with reconciling financial reports prepared under home country GAAP to U.S. GAAP is one of the most significant listing costs for foreign firms. For example, Biddle and Saudagaran (1989) claim that initial listing and registration fees are relatively

³ Exceptions are Canadian and Israeli firms that list directly, a few Dutch firms that list as New York Registry Shares, and a handful of European companies that list directly as Global Registered Share (GRS). However, ADR has been by far the most popular mode of listing for foreign firms: as of December 31, 1999, approximately 96% of foreign firms which list in the United States do so as an ADR. The 10-K filing refers to the annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.

⁴ On the other hand, foreign regulators and U.S. exchanges have lobbied the SEC to consider ending the accounting reconciliation requirement for foreign companies listing in the United States in order to increase cross-border mergers and capital flow. Foreign regulators and major U.S. stock exchanges have lobbied U.S. market regulators to accept financial statements prepared in accordance with non-U.S. accounting rules (e.g., the primary GAAP in the firm's country of domicile), which numerous foreign companies currently use to list on exchanges outside the United States (Wall Street Journal, February 17, 2000).

minor components of the cross-listing cost, compared with the costs of meeting the accounting and disclosure requirements arising from differences between countries in financial reporting and auditing practices and regulatory and registration requirements. Similarly, Fanto and Karmel (1997) claim that the main costs of cross-listing in the United States are the costs of complying with U.S. GAAP and the risk of lawsuits, rather than direct costs of listing such as listing charges and fees for professional advice.⁵

However, there is a systematic variation in reporting requirements within non-U.S. firms cross-listing in the United States. For example, foreign firms that enter the U.S. market and trade in the over-the-counter market (otherwise known as Level I ADRs) or have limited secondary trading under Rule 144a (otherwise known as “pink sheet” or “PORTAL”)⁶ do not need to comply with U.S. GAAP because of the 1934 Act’s exemption under Rule 12g3-2(b) for unlisted companies that furnish home country information to the SEC. Only if a firm wishes to list and trade on organized exchanges such as NYSE, AMEX, and NASDAQ (these firms are otherwise known as Level II and Level III ADRs) must the firm file accounting reconciliations.⁷ This means the cost of reconciling financial statements is likely to be a consideration only for firms listing on organized exchanges, but not for those choosing to cross-list and trade over-the-counter or be placed as 144a, in which cases reconciliation is not necessary.

⁵ More than half of the companies included in the Fanto and Karmel (1997) survey (i.e., foreign companies that had entered the U.S. capital market) complained about the difficulties, expense, and unfamiliarity of U.S. accounting and disclosure requirements (including the required Management Discussion and Analysis).

⁶ 144a ADRs are placed privately (as opposed to being traded publicly) to qualified institutional investors.

⁷ Regardless of whether securities must be registered, the 1934 Act and Rule 10b-5 make it illegal to commit fraud in conjunction with the sale of securities in the United States. A defrauded investor can sue for recovery under the 1934 Act. A recent example is the Roche Holdings case in 2002, where their Level I ADR had a class action lawsuit launched against it for material misstatements (Prime Zone Media Network, Inc., May 31, 2002).

Our evidence shows the following: First, consistent with Doidge et al. (2004), we confirm the presence of bonding at the cross-listing level in our sample by documenting that firms from a stronger investor protection environment are more likely to cross-list in the United States. Also consistent with Doidge et al. (2004), we do not observe evidence of bonding for firms' cross-listing decisions with respect to the disclosure level in the firms' country of domicile. However, we document bonding (among cross-listing firms) with respect to the disclosure level in firms' exchange-listing behavior: firms originating from a higher disclosure environment are more likely to exchange-list. Our results suggest that while firms from lower disclosure regimes are more likely to cross-list in the United States, they are less likely to list on an organized exchange, compared to firms from a higher disclosure regime. By documenting these results, we lend further support to the bonding hypothesis proposed by Doidge et al. (2004) and provide a potential explanation for why they do not observe the bonding behavior with respect to disclosure level in their cross-listing choice model.

After controlling for self-selection, we also find that the valuation of firms domiciled in both high and low disclosure regimes generally improves after cross-listing. However, our evidence shows that exchange-listing firms from a lower disclosure regime receive a lower valuation than exchange-listing firms from a higher disclosure regime, despite the fact that their listing cost is likely to be higher, relative to exchange-listing firms from a more rigorous disclosure environment.⁸ In principle, these results lend further support to Coffee's claim (2002) that the (net) benefit of cross-listing varies

⁸ We expect that the cost of U.S. GAAP compliance will be higher for firms domiciled in a low disclosure regime due to a larger discrepancy between their home country disclosure level and the required disclosure level in the United States.

within cross-listing firms (i.e., bonding applies primarily to exchange-listing firms).⁹

Extending this idea, our results suggest that the benefit from bonding varies even within exchange-listing firms: we demonstrate that the magnitude of exchange-listing benefit in the form of higher valuation is systematically related to the disclosure level in an exchange-listing firm's country of domicile.

This study extends prior literature in two ways. First, we identify when the disclosure level in the cross-listing firm's country of domicile matters in its bonding decision by separately examining exchange-listing firms and non-exchange-listing firms, and providing further support for the bonding hypothesis. Second, we show that while there is a benefit from cross-listing on an organized exchange where increased disclosure (i.e., reconciliation) is mandated, the benefit is smaller (larger) for firms domiciled in a jurisdiction where the disclosure level in the economy is relatively low (high). Taken together, our results suggest that the net benefit from exchange-listing is likely to be lower for firms that list from a lower disclosure regime, and that this might be the reason why firms domiciled in a lower disclosure regime are less likely to exchange-list.

This paper is organized as follows. In the next section, we describe the background to the issue. In Section 3, we describe the sample and methodology. In Section 4, we discuss the results. We conclude in Section 5.

2. Background to the Issue

There is a growing literature on the bonding behavior of cross-listing firms (e.g., Coffee 2002; Reese and Weisbach 2002; Doidge et al. 2004; Pagano et al. 2004). As

⁹ King and Segal (2004) provide evidence consistent with this view. They document that Canadian companies cross-listed on a U.S. stock exchange that are held by a larger number of U.S. institutional

Coffee (2002) notes, the notion of bonding comes from the law and economics literature where it is used to refer to the costs or liabilities an agent or entrepreneur will incur in order to assure investors that it will perform as promised. He further argues that such bonding can occur either through the courts (legal or liability bonding) or through monitoring by reputational intermediaries such as U.S. underwriters, auditors, credit-rating agencies, equity analysts, and stock exchanges (reputational bonding).

Pagano et al. (2002) document that firms list abroad for financial and strategic reasons. First, by listing abroad, firms may improve the terms on which they can raise capital or on which their shareholders can sell existing securities. Cross-listing can also strengthen a company's competitive position in its industry by enhancing its reputation among stakeholders, such as suppliers, employees, customers, etc. The bonding hypothesis says that, by choosing to list on a tightly regulated foreign exchange, a firm makes an advance commitment to adhere to higher standards of disclosure and/or corporate governance.¹⁰

Stulz (1999) argues that companies from countries with poor legal standards can reduce agency costs of external finance by subjecting themselves to more stringent standards, thus lowering their cost of capital. Similar ideas are found in theoretical models by Cantale (1996), who argues that firms signal quality by listing on strictly regulated markets. Cantale's (1996) model suggests that companies in countries with less strict supervision and lower disclosure levels should be more likely to cross-list abroad (the bonding hypothesis).

investors or that trade actively on a U.S. stock exchange are valued at a premium relative to Canadian companies listed exclusively in the home market, and are valued similarly to their U.S. peers.

Reese and Weisbach (2002) find that equity issues generally increase following cross-listings and that the increase is larger for cross-listing firms from countries with weak investor protection. They conclude that the desire to protect shareholder rights is an important reason why some non-U.S. firms cross-list in the United States. Siegel (2004) examines whether U.S. laws and regulations deterred insiders of a Mexican firm from engaging in illegal asset-taking, how U.S. legal and regulatory institutions responded once the alleged asset-taking took place, and how the financial markets responded in allocating subsequent resources to firms. He concludes that the SEC might not have been fully effective in enforcing the law against U.S.-listed foreign firms.¹¹

King and Segal (2004) document that Canadian companies cross-listed on a U.S. stock exchange that are held by a larger number of U.S. institutional investors or that trade actively on a U.S. stock exchange are valued at a premium relative to Canadian companies listed exclusively in the home market, and are valued similarly to their U.S. peers. As a consequence, they argue that a foreign firm must convince investors that its shareholder rights will be protected in order to enjoy the full benefits of cross-listing. Hail and Leuz (2004) investigate whether the valuation effect comes from cost of capital or cash flow effects. They find that: (1) cross-listing on a U.S. exchange reduces firms' costs of capital; and (2) there are substantial cash-flow effects, which suggest cross-listing in the U.S. improves a firm's ability to exploit and generate growth opportunities.

Doidge et al. (2004) hypothesize and find that firms originating from jurisdictions with a stronger investor protection mechanism in place are more likely to cross-list in the

¹⁰ Reese and Weisbach (2002) document that non-U.S. firms that list in the United States are also subjected to greater scrutiny and monitoring from the press and from the investment community, further improving the protection of minority shareholders.

United States because the cost of cross-listing is likely to be lower. However, they do not find evidence to support the bonding hypothesis with respect to the financial reporting disclosure level in a firm's country of domicile. According to their bonding hypothesis, firms domiciled in a higher disclosure regime are more likely to cross-list in the United States, because the cost of meeting the disclosure requirements will be lower.¹² Counter to the intuition behind the bonding hypothesis, their evidence shows that firms domiciled in a weaker disclosure environment are more likely to cross-list.

One possible explanation for why firms from a lower disclosure environment are more likely to cross-list in the United States (e.g., Doidge et al. 2004) is the cost of meeting U.S. disclosure requirements, which varies systematically depending on where the firms choose to cross-list. While firms choosing to cross-list on an organized exchange in the United States must bear the costs associated with filing the 20-F reconciliation, which reconciles the firm's home country accounting figures to U.S. GAAP figures, firms that cross-list and choose to trade over-the-counter or be placed directly to institutional investors as a 144a, are not required to file the reconciliation.¹³ Thus, if firms from a lower disclosure environment have a higher tendency to cross-list than firms from a higher disclosure environment (Doidge et al. 2004) but have a lower

¹¹ In contrast, Coffee (1999) claims that U.S. laws and regulations effectively deter malfeasance by foreign firm insiders.

¹² In contrast, Saudagaran and Biddle (1992) argue that firms tend to choose an exchange that incurs lower cost of cross-listing. However, since the bonding effect may vary across national exchanges included in their study, it is difficult to draw any meaningful implications of their results to the bonding literature.

¹³ The 20-F reconciliation requirement has long been a controversial issue. For instance, the SEC's mandate to protect U.S. investors and to ensure they are fully informed when making investment decisions suggests that foreign firms issuing securities in the U.S. market must meet the same disclosure requirements as domestic issuers (e.g., Biddle and Saudagaran 1989). On the other hand, U.S. stock exchanges claim that they are at a competitive disadvantage because stringent U.S. reporting requirements discourage foreign firms from listing in the United States. In particular, U.S. exchanges claim they are at a competitive disadvantage relative to foreign exchanges in attracting new securities listings and that imposing domestic disclosure requirements on foreign issuers deprives individual U.S. investors of desirable investment opportunities by deterring foreign firms from listing their shares in the United States.

tendency to list on an organized exchange due to higher costs of U.S. GAAP compliance, bonding to improved disclosure (i.e., the positive correlation between firms' home country disclosure level and the likelihood of listing) is likely to be observed at the exchange-listing level, not at the cross-listing level.

Biddle and Saudagaran (1989) find that firms are less likely to list their shares on foreign stock exchanges with higher disclosure levels than those of their domiciles. This is consistent with the view that stringent disclosure levels can reduce access to foreign capital and investment opportunities. They suggest that when firms decide to list either on a domestic exchange or a foreign exchange, they tend to choose an exchange where the required disclosure level is lower. In a sample of firms that cross-list outside their country of domicile, Saudagaran and Biddle (1992) find that exchange choices in alternative countries are influenced by the financial disclosure level of the firm's country of domicile. This study suggests that when firms decide on which foreign exchange to cross-list, they tend to choose an exchange with a lower disclosure requirement.

Assuming that the reporting requirements of the U.S. GAAP are some of the most stringent ones in the world (e.g., Bradshaw et al. 2004), the bonding hypothesis predicts that the less extensive the home country's reporting requirements, the less likely it is that a firm will cross-list in the United States, because the cost of compliance with U.S. GAAP will be higher. Since the cost of financial statement reconciliation could play an important role only for exchange-listing firms but not for cross-listing firms that do not list on an exchange, we predict that one might be able to observe bonding to improved disclosure in firms' listing exchange choice behavior. Our first hypothesis is thus (stated in the alternative):

H1: Firms whose home-country disclosure level is higher (lower) will be more (less) likely to cross-list on an organized exchange.

Our next hypothesis investigates how the market values firms bonding themselves to a stricter accounting standard by choosing to cross-list on an organized exchange, after controlling for other determinants of listing. While one would expect that firms' cost of capital would decrease after bonding to a stricter accounting standard by cross-listing on an exchange where firms are required to comply with U.S. GAAP, it is unclear whether the valuation will be associated with the disclosure level in the firm's country of domicile. For instance, one might not be able to observe any cost of capital effect from bonding to improved disclosure if the disclosure level in a firm's country of domicile plays a role in the valuation of cross-listed firms even after they comply with U.S. GAAP. This could be the case if investors are not fully aware of the fact that exchange-listing firms must commit to an increased level of disclosure or if investors do not view the reconciliation requirement as producing comparable accounting numbers. Under this scenario, it is possible that cross-listed firms from a lower disclosure regime receive a lower valuation.¹⁴

By listing on a major exchange and complying with U.S. GAAP, firms are likely to improve their information environment by receiving more media coverage, and by attracting more analyst interest by analysts (see Lang et al. 2003). To the extent that the information asymmetry component of cross-listing firms' cost of capital decreases due to the improved information environment, and that the difference in the information environment among firms becomes smaller after uniformly committing to improved

¹⁴ Yet another possibility is that firms with a healthy growth potential choose to exchange-list and file the costly 20-F reconciliation in order to "signal" their growth prospect, which can lead to a higher valuation for the exchange-listing firms.

disclosure, one might not observe any systematic difference in the valuation premium among cross-listed firms, *ceteris paribus*. Since the direction of association is not obvious, we state our second hypothesis in the null form as:

H2: There is no systematic difference in the valuation premium between exchange-listing firms from a higher disclosure regime and exchange-listing firms from a lower disclosure regime.

3. Sample and Univariate Analysis

We obtain our initial sample firms and use data on the firms in the Global Vantage database for the year 2000. Of 18,537 firms for which 2000 financial data are available in the database, following Doidge et al. (2004) we exclude 6,301 firms that have total assets less than U.S. \$100 million, to make firms more comparable across countries. We further lose 2,144 firms for which data are not available for firm-level control variables. We then check the cross-listing status of those firms in the United States as of December 21, 2000, using the Bank of New York Global Equity Investing Depository Receipt Service list.

Next, we use the 1995 disclosure index produced by the Center for International Financial Analysis and Research (CIFAR hereafter)¹⁵ to proxy for the extent of home country accounting disclosure, which is known to explain firms' cross-listing behaviors (see for instance, Pagano et al. 2002; Doidge et al. 2004).¹⁶ Following Doidge et al. (2004), we associate a firm's choice of cross-listing with investor protection proxies,

¹⁵ The CIFAR index, which has been used extensively in recent research, rates the annual reports of 1,000 leading companies from 41 countries for their inclusion and exclusion of 85 items (see Hope 2003 for validity tests of the CIFAR index and further references).

¹⁶ We use country-level CIFAR scores, rather than firm-level CIFAR scores, for several reasons. First, this increases the comparability of our study with previous studies that document bonding. Second, since only a limited number of firms from selected countries in a particular year are included in the CIFAR index, we increase our sample size by using the country-level scores.

including anti-director rights, judicial efficiency, legal origin, and other variables representing firm-level characteristics.

The inclusion of the investor protection proxies are based on La Porta et al. (1998), who show that: investor protection tends to be stronger in common law regimes than in code law regimes¹⁷; that investor protection is higher when the judicial system is more efficient and when anti-director rights are higher¹⁸; and that the quality of investor protection is positively related to stock market development (captured by the liquidity of the firm's home stock market). While obtaining country-level variables, we exclude 3,894 firms that do not have a disclosure score available in the CIFAR index (1995) or that do not have anti-director rights and judicial efficiency scores available in La Porta et al. (1998).¹⁹

[Insert Tables 1, 2, and 3 about here]

Table 1 summarizes the sample selection procedure described above. Our sample represents firms from 36 different countries (Panel A of Table 2). Among our 6,198 sample firms, 269 firms were listed on one of the major stock exchanges in the United States, 343 firms were traded on OTC or traded under Rule 144a/Regulation S, and 5,454 firms were not cross-listed in the United States. Panel B shows that 37.7 percent of the sample firms are manufacturing firms, 18.8 percent of the firms are from the banking and

¹⁷ For instance, LaPorta et al. (1998) show that code law countries tend to have smaller and narrower capital markets.

¹⁸ This index aggregates six different shareholder rights: the right of shareholders to mail their proxy, the right of shareholders not to have to deposit shares ahead of the shareholder meeting, cumulative voting of minority shareholders on the board of directors, an oppressed minorities mechanism in place, the right of shareholders who represent less than 10% of share capital to call an extraordinary meeting, and preemptive rights that can only be waived by a shareholder's vote.

¹⁹ Some countries such as China, Czech Republic, Egypt, Hungary, Indonesia, and Jordan had firm-level data available in Global Vantage, but did not have either the CIFAR score or the La Porta score.

financial services sector, and 43.5 percent of the firms are from other industries, such as agriculture and food, mining and construction, transportation, retail and other services. Table 2 summarizes country and industry distributions of firms by the location of the listing. Our test and control variables are defined in Table 3.

[Insert Table 4 about here]

The country-level variables used in our analyses are tabulated in Table 4. In Panel A, we report the CIFAR disclosure index scores, legal origin, enforcement effectiveness measures (anti-director rights and judicial efficiency), liquidity ratio, and the gross national product. In Panel B of Table 4 we report the means and medians of the major variables separately for cross-listed and non cross-listed firms and compare the differences between the two samples. Consistent with Doidge et al. (2004), firms that cross-list have lower home-country disclosure levels relative to firms that do not cross-list (see Panel B of Table 4): the mean disclosure index for cross-listed firms is 72.25 while the score is 72.98 for non-cross-listed firms. However, we do not observe a significant difference in the anti-director rights scores between the two groups of firms.

In addition, the mean and the median comparisons show that firms from more developed economies (those with higher *Log_GNP*) are less likely to cross-list and that firms that cross-list tend to be larger than those that do not. Cross-listing firms tend to be growth firms, are more profitable (i.e., higher return on assets), are more leveraged, and have a higher capital intensity compared with firms that do not cross-list. In terms of capital procurement, those that cross-list tend to issue more debt and more equity,

consistent with the notion of cross-listing firms growing faster and being larger than non-cross-listing firms.

In Panel C of Table 4 we compare the means and medians of our test and control variables between exchange cross-listed and non-exchange cross-listed firms. We first observe that firms of French and Scandinavian code law origin have a high tendency to cross-list on an organized exchange (i.e., the means of *F_Law* and *G_Law* are significantly higher for firms that list on an organized exchange, compared to those that do not list on an organized exchange), while common law and German code law origin cross-listing firms seem to trade less frequently on an organized exchange. Overall, we do not observe a systematic pattern in the exchange-listing behaviors among our sample firms with respect to their legal origin. These results are qualitatively similar to the findings of Doidge et al. (2004).

Next, both the mean and median disclosure scores are higher for the exchange-listed firms than for the non-exchange-listed firms, consistent with the notion of bonding. Combined with the results reported in Panel B, these results seem to provide univariate support for *H1*, which suggests that while firms domiciled in a lower disclosure regime are more likely to cross-list relative to firms originating from a higher disclosure regime, they tend to avoid listing on an exchange where U.S. GAAP compliance is required.²⁰ Further comparisons show that the exchange-listed firms tend to be larger, profitable growth firms that issue more equity, and are more likely to meet the minimum

²⁰ In our sample, approximately 13% of the firms domiciled in a lower disclosure regime (i.e., firms domiciled in a country that has a below median CIFAR score) cross-list outside an organized exchange (i.e., either trade over-the-counter or trade as 144a), compared to about 8% of firms domiciled in a higher disclosure regime. The difference in the proportion between the two regimes is significantly different from zero ($p = 0.078$).

quantitative listing requirements of the NYSE, NASDAQ or AMEX than non-exchange-listed firms.²¹

4. Methodology and Results

Cross-listing choice

Before testing our hypotheses, we first replicate Doidge et al. (2004) in order to ensure the comparability of our sample with theirs. In equation (1), the dependent variable *XLIST* is an indicator variable that takes the value of one if the firm cross-lists in the United States, and zero otherwise. The rest of the regression variables are described in detail in Table 3.²² In including a set of investor protection measures in the regression models, we note that these variables (i.e., anti-director rights and judicial efficiency) correlate highly with each other. Thus, including these measures separately into the regression will create collinearity, making an interpretation of the coefficients difficult. To circumvent this issue, we use a factor analysis to form a composite measure of investor protection, which we label as *Investor_rights_factor*, to capture the effects of investor protection in an economy.²³

We expect that the disclosure level will be an important determinant of firms' listing (both cross-listing and exchange-listing) choices primarily because the disclosure

²¹ Each national stock exchange requires a different set of quantitative listing requirements. For example, the alternative listing standards for non-U.S. firms on the NYSE include: 5,000 worldwide shareholders, 2.5 million worldwide publicly held shares, \$100 million worldwide public market value, and aggregate three-year pre-tax earnings of \$100 million together with a minimum of \$25 million in earnings in each of the two most recent years. More detailed information on the listing requirements of the NYSE, NASDAQ, and AMEX is available at "Depository Receipts – An Information Guide," published by Citibank in 2000.

²² In order to mitigate the impact of statistical outliers, we winsorize extreme values of all firm-level variables that fall in the top and bottom 1% of the pooled distribution.

²³ Factor analysis shows that the same weights of the two variables (judicial efficiency and anti-director rights) should be loaded onto one factor, so the factor is constructed by the equally weighted sum of the two variables.

requirement is one of the most significant differences between exchange-listing and non-exchange-listing firms: all cross-listing firms are subject to the benefits of bonding and monitoring to some extent (e.g., being subject to greater scrutiny and monitoring from the press and from investor community), while both the benefit and the cost of increased disclosure applies only to exchange-listing firms.

In addition to investor protection proxies, we include several firm characteristics that have been identified by previous studies as determinants of listing in order to control for firm-level demands to raise funds. They are firm size, capital intensity, financial leverage, asset turnover, issuance of debt and equity, and industry. This gives us equation (1) below. Based on Doidge et al. (2004), we predict a negative sign for *Disclosure* and a positive sign for *Investor_rights_factor*.

$$\begin{aligned}
 XLIST = & \alpha_0 + \alpha_1 F_Law + \alpha_2 G_Law + \alpha_3 S_Law + \alpha_4 Disclosure \\
 & + \alpha_5 Investor_rights_factor + \alpha_6 Liquidity_R + \alpha_7 Log_GNP \\
 & + \alpha_8 Size + \alpha_9 Cap_Intensity + \alpha_{10} Leverage + \alpha_{11} Turnover \\
 & + \alpha_{12} Debt_Issue + \alpha_{13} Equity_Issue + \alpha_{14} Industry + e \quad - - - \quad (1)
 \end{aligned}$$

Next, we model and test an exchange-listing model. The dependent variable in this regression, *ORG_EXC_XLIST*, takes the value of one if a firm cross-lists on an organized exchange where the firm is required to conform to U.S. GAAP by filing the 20-F reconciliation. For this purpose, we examine a sub-sample of firms used in the previous model, namely those firms that cross-list in the United States. In this regression, we include dummy variables for whether a firm meets the listing requirements for a

particular exchange (*Listing_R*) to control for the possibility that the firm's decision to list on an organized exchange is affected by the requirements of that exchange.

Based on the bonding hypothesis, we predict a positive sign for *Disclosure* in the following equation (2). A positive coefficient on *Disclosure* would mean that firms from a higher (lower) disclosure regime are more (less) likely to reconcile to U.S. GAAP. This would be the case if a firm's decision to list on an organized exchange is affected by the cost of reconciling, holding the benefits of cross-listing on an organized exchange constant across firms: all other things being equal, firms that find the reconciliation more costly are less likely to cross-list, and vice versa.

$$\begin{aligned}
 ORG_EXC_XLIST = & \alpha_0 + \alpha_1 F_Law + \alpha_2 G_Law + \alpha_3 S_Law + \alpha_4 Disclosure \\
 & + \alpha_5 Investor_rights_factor + \alpha_6 Liquidity_R + \alpha_7 Log_GNP \\
 & + \alpha_8 Listing_R + \alpha_9 Size + \alpha_{10} Cap_Intensity + \alpha_{11} Leverage \\
 & + \alpha_{12} Turnover + \alpha_{13} Debt_Issue + \alpha_{14} Equity_Issue \\
 & + \alpha_{15} Industry + e \qquad \qquad \qquad - - - (2)
 \end{aligned}$$

[Insert Table 5 about here]

The results from estimating equation (1) are reported in Table 5. Consistent with Doidge et al. (2004), the *Disclosure* coefficient is negative and highly significant ($p < 0.01$) across different specifications (i.e., models 1 through 4 in Table 5), while *Investor_rights_factor* is generally positive and significant. Both of these results are consistent with Doidge et al. (2004). The explanatory power of the model ranges from around 5.6% to 38%, depending on the specification. It is particularly noteworthy that the explanatory power of the model increases sharply (from 5.6% to over 29%) when the

control variables are included in the model. The highly significant t-statistic on firm size is consistent with the notion that since the costs of cross-listing include a large fixed cost component, they bear most heavily on small companies and thus large companies are more likely to cross-list (Saudagaran 1988). Overall, our results are directly comparable to previous studies that provide support for the bonding hypothesis.

[Insert Table 6 about here]

The results from estimating equation (2) are reported in Table 6. Supporting *H1*, the coefficient on *Disclosure* is positive and significant across the specifications, suggesting that firms with a lower home-country disclosure level are less likely to cross-list on an organized exchange where reconciliation is required. We interpret this finding as being consistent with the idea that the cost of financial statement reconciliation is higher for firms originating from a lower disclosure regime. This finding suggests that among the firms cross-listed in the United States, the cost associated with more stringent disclosure requirements plays an important role in explaining a firm's listing location choice.

Next, to examine whether our results are driven by an uneven country representation of sample firms, we re-estimate both equations (1) and (2), using a weighted logit approach, using the number of observations per country as the weight. In these regressions, each country is given an equal weight, regardless of how many firms from the particular country are actually included in the sample, reducing concerns related to our results being driven by this issue.

[Insert Table 7 about here]

The results reported in Table 7 show that our main findings are not driven by an uneven country representation: there is clear evidence of bonding at the exchange-listing level with respect to the disclosure requirements. While the results are generally consistent with the previous ones, the *Investor_rights_factor* becomes positive and significant in the exchange-listing regression, consistent with the idea of bonding. In other words, we observe bonding with respect to both disclosure and investor protection level in firms' country of domicile in the weighted logit models.

Valuation impact of cross-listing and exchange-listing

Next we examine the valuation impact of both cross-listing and exchange-listing choices, using Tobin's q as the dependent variable. Specifically, we test whether there is a difference in the market's valuation of firms whose cost of U.S. GAAP reconciliation is likely to vary. To distinguish lower and higher disclosure regimes, we identify firms with a country-level CIFAR score above (below) the median of all country-level CIFAR scores as a higher (lower) disclosure regime.

The purpose of this investigation is to examine whether firms that exchange-list from a lower disclosure regime, where the cost of capital is expected to be higher (and thus the valuation is lower) due to the lower disclosure level, receive a similar level of valuation as those that exchange-list from a higher disclosure regime. If exchange-listing firms from a lower disclosure regime receive a similar level of valuation as exchange-listing firms from a higher disclosure regime, this would imply there is a clear benefit of exchange-listing from the perspective of a firm originating from a lower disclosure

regime in the sense that it receives a similar valuation as a firm cross-listing from a higher disclosure regime.²⁴

On the other hand, if firms domiciled in a lower disclosure regime receive a lower valuation than their counterparts from a higher disclosure regime, it would imply that the net benefit from an exchange-listing is lower for firms from a lower disclosure regime, given that these firms are likely to incur higher costs of financial statement reconciliation compared to firms from a higher disclosure regime. To test this conjecture, we estimate the following regression model, which employs Tobin's q as the dependent variable.²⁵ In this regression, we also control for global industry q in order to control for the industry effect on q globally (Doidge et al. 2004). The other regression variables are defined in Table 3.

$$\begin{aligned}
 \text{Tobin's } Q &= \alpha_0 + \alpha_1 XLIST + \alpha_2 ORG_EXC_XLIST + \alpha_3 Low_Disclosure \\
 &+ \alpha_4 XLIST*Low_Disclosure + \alpha_5 ORG_EXC_XLIST*Low_Disclosure \\
 &+ \alpha_6 Ivestor_rights_factor + \alpha_7 Liquidity_R + \alpha_8 Growth \\
 &+ \alpha_9 ROA + \alpha_{10} Global\ Industry\ q + e \qquad \qquad \qquad - - - \quad (3)
 \end{aligned}$$

In estimating equation (3), we estimate both ordinary least squares and two-stage least squares models. The latter specification is intended to control for self-selection because it is possible that the probability of listing is higher for firms that already meet the listing requirements (e.g., the number of shares, shareholder base, and minimum pre-

²⁴ A ceteris paribus condition applies. Specifically, this statement holds only if one assumes that there is no material difference in the streams of future cash flows between the two groups of firms. We are not aware of any previous study that addresses this issue.

²⁵ We acknowledge that various accounting issues (degree of conservatism, treatment of goodwill, etc.) as well as differences in inflation can affect Tobin's q. Despite these limitations, we use it to be consistent with previous literature (e.g., Doidge et al. 2004).

tax earnings).²⁶ Since we model firm q as a function of other country and firm characteristics and the firm's listing decision, the regression errors are likely to be associated with the firm's listing decision if we do not control for self-selection, biasing the listing decision coefficient in the firm q model. To estimate the first stage equation (i.e., the cross-listing choice model) in the two-stage models, we use model 4 in Table 6, which is:

$$\begin{aligned}
 XLIST = & \alpha_0 + \alpha_1 F_Law + \alpha_2 G_Law + \alpha_3 S_Law + \alpha_4 Disclosure \\
 & + \alpha_5 Investor_rights_factor + \alpha_6 Liquidity_R + \alpha_7 Log_GNP \\
 & + \alpha_8 Listing_R + \alpha_9 Size + \alpha_{10} Cap_Intensity + \alpha_{11} Leverage \\
 & + \alpha_{12} Turnover + \alpha_{13} Debt_Issue + \alpha_{14} Equity_Issue \\
 & + \alpha_{15} Industry + e \qquad \qquad \qquad - - - \quad (4)
 \end{aligned}$$

[Insert Table 8 about here]

In the first-stage equation (i.e., equation (4)), we do not include firm growth measures such as ROA and sales growth, since they are more closely related to firm value than listing decisions. As Doidge et al. (2004) note, an important issue in a self-selection model is to choose instruments in the selection equation (i.e., the listing-decision equation) that are exogenous in the second-stage equation (i.e., the valuation equation). For this reason, Doidge et al. (2004) do not include firm growth measures, but instead include firm size in the first-stage regression. Similarly, we include firm growth measures in the valuation equation rather than in the listing-decision equation. However, our main results do not change when ROA and sales growth are included in the first stage.

²⁶ Refer to footnote 19 for details.

Consistent with Doidge et al. (2004), the results reported in Table 8 suggest that cross-listing firms on average receive a higher valuation compared with non-cross-listing firms regardless of the disclosure level in the firms' country of domicile (i.e., both *XLIST* and $XLIST + XLIST * Low_Disclosure$ are positive and significant). However, $XLIST + XLIST * Low_Disclosure$ is significant under the OLS regression, but not when the self-selection is taken into account, suggesting that after controlling for the effects of self-selection and other determinants of firm value, there is no material difference in the valuation of cross-listing firms although the disclosure level in the firms' home country economy might be different.

Next, we find that cross-listing firms which list on an organized exchange also receive a higher valuation: the coefficients on *ORG_EXC_XLIST* and $ORG_EXC_XLIST + ORG_EXC_XLIST * Low_Disclosure$ are positive and significant, meaning cross-listing firms listing on an organized exchange are valued higher whether they are domiciled in a lower disclosure regime or a higher disclosure regime. However, the coefficient on $ORG_EXC_XLIST * Low_Disclosure$ is negative and significant under both the OLS and two-stage least squares models, suggesting that cross-listing firms that are domiciled in a lower disclosure regime that choose to exchange-list receive a lower valuation than exchange-listing firms that originating from a higher disclosure regime.

A possible explanation for this finding is that investors have access to more information about exchange-listed firms than cross-listed firms that do not list on an exchange, as the former receive more attention from the investment community in the form of more media and analyst coverage (e.g., Grant 1980). Thus, it is possible that investors are more aware of the disclosure environment of exchange-listed firms than that

of non-exchange-listed firms, and as a consequence, require a higher risk-premium for the greater information uncertainty they perceive for firms cross-listing from a lower disclosure regime. This could potentially explain the valuation difference in exchange-listed firms that have varying disclosure levels in their country of domicile.²⁷

5. Conclusion

With a rapidly growing number of cross-border listings in the global capital market and in the United States in particular, understanding the underlying motives for cross-listing is important for security regulators, accounting standard setters, corporate managers, and investors. The recent development in the bonding literature attempts to provide a framework to help us better understand the behavior of cross-border listing firms. However, the seemingly conflicting evidence on bonding with respect to different country-level characteristics (i.e., investor protection and accounting disclosure levels) has been difficult to reconcile.

While bonding implies more benefit and more cost, since few previous studies have directly examined both the benefit and the cost sides of bonding simultaneously, their implication for the net benefit of bonding has not been clear. The goal of this study is to shed some light on these issues, acknowledging the fact that while cross-listing firms benefit from improved disclosure, complying with current U.S. disclosure requirements entails non-trivial cost to the cross-listing firms.

²⁷ Since all exchange-listed firms comply with U.S. GAAP, implicit in this statement is that investors consider the disclosure level of the exchange-listed firms' country of domicile in valuing firms, even if they file the 20-F reconciliation. Supporting evidence for this assumption is found in Chan and Seow (1996), who find that home country earnings are more value-relevant than U.S. GAAP earnings for non-U.S. firms cross-listed in the United States.

We provide evidence consistent with the view that firms bond to a more effective investor protection and a more extensive disclosure regime in order to enjoy the benefits from such behavior, lending further support to the bonding hypothesis. Our evidence also suggests firms from a lower disclosure regime, while more likely to cross-list than firms from a higher disclosure regime, are more likely to list outside an organized exchange. As a result, the disclosure level coefficient has a negative sign in the cross-listing equation (Doidge et al. 2004).

Our pricing tests show that while exchange-listing firms generally receive a higher valuation than non-exchange-listing firms, exchange-listing firms domiciled in a higher disclosure regime benefit relatively more from such listing than exchange-listing firms from a lower disclosure regime do, despite the fact that the cost of financial statement reconciliation is likely to be lower (higher) for the firms from a higher (lower) disclosure regime. The lower net benefit from exchange-listing for firms domiciled in lower disclosure regimes suggests their lower likelihood of exchange-listing, compared to firms originating from a higher disclosure regime, might be optimal behavior.

While we believe our results provide evidence that might be of interest to academics, practitioners, standard-setters, and regulators by highlighting the importance of disclosure-related cross-listing costs in foreign firms' listing decisions when the cost is likely to matter the most, we note some caveats of this study. First, it is possible that a firm's decision to cross-list on an organized exchange and to conform to U.S. GAAP might be influenced by the difference between their home country GAAP earnings and U.S. GAAP earnings. For instance, firms experiencing a decline in reported earnings after converting to U.S. GAAP might be less likely to report U.S. GAAP earnings in

order to avoid a decline in the stock price. Currently, our tests do not consider this possibility because doing this would require “as-if” U.S GAAP earnings figures for those that do not comply with U.S. GAAP.

Next, while our evidence suggests that the net benefit of an exchange-listing is lower for firms domiciled in a lower disclosure regime, our evidence does not tell us why this is the case. Some possible explanations for why exchange-listing firms from a lower disclosure regime receive a lower valuation compared to firms from a higher disclosure regime, not explored in this study, are that: (1) investors do not fully appreciate the fact that all exchange-listing firms are subject to the same disclosure level by complying with U.S. GAAP, and thus there is a systematic difference in the cost of capital within exchange-listing firms (because of perceived differences in the disclosure level among those firms); or that (2) investors underestimate the future cash-flow growth opportunities of exchange-listing firms from a lower disclosure regime (i.e., mostly firms from emerging economies that are known to experience rapid growth).

Finally, we note that a cross-listing firm’s cost of complying with U.S. GAAP is likely to be highest in the initial year and lower once the firm is more familiar with the reconciliation process. Thus, it is possible that the contrast between the benefits of listing on an organized exchange, such as better access to capital, lower cost of capital, and enhanced name recognition and the cost of compliance with U.S. GAAP is likely to be most pronounced in the initial year of listing. Since most of our sample firms are not in the initial year of their listing, however, it is unlikely that has biased our results.²⁸

²⁸ Over 92% of our sample firms were not in their initial year of listing.

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Table 1
Sample Construction

Firms in the Global Vantage Database in year 2000	18,537
(-) Total assets in year 2000 less than 100 million US\$	(6,301)
(-) Firms in the countries where any country-level variables are not available.	(3,894)
(-) Firms that have missing control variables.	(2,144)
Number of sample firms	6,198
Listing status of sample firms as of Dec. 31, 2000	
Non Cross-listed firms	5,454
Cross-listed firms	744
(Listed on NYSE)	(205)
(Listed on AMEX/NASDAQ)	(64)
(Traded on OTC)	(343)
(Traded under Rule 144a/Regulation S)	(132)
Total	6,198

Some of the sample firms traded on an organized exchange (NYSE, AMEX or NASDAQ) also have shares traded OTC or traded under Rule 144a/Regulation S. The number of firms traded on OTC and Rule 144a/Regulation S does not include firms that are also listed on NYSE, AMEX, or NASDAQ.

Table 2
Distributions by Country and Industry

Panel A: Sample firms by country

<i>Country</i>	Non cross-listed firms		Exchange listed firms (NYSE/AMEX /NASDAQ)		OTC/Rule144a/ Reg.S firms		Total	
	Number	%	Number	%	Number	%	Number	%
Argentina	12	0.2	8	3.0	3	0.6	23	0.4
Australia	130	2.4	10	3.7	20	4.2	160	2.6
Austria	48	0.9	0	0	10	2.1	58	0.9
Belgium	54	1.0	1	0.4	2	0.4	57	0.9
Brazil	55	1.0	14	5.2	15	3.2	84	1.4
Chile	49	0.9	15	5.6	1	0.2	65	1.1
Colombia	12	0.2	1	0.4	3	0.6	16	0.3
Denmark	68	1.3	3	1.1	1	0.2	72	1.2
Finland	44	0.8	5	1.9	3	0.6	52	0.8
France	249	4.6	20	7.4	15	3.2	284	4.6
Germany	261	4.8	11	4.1	15	3.2	287	4.6
Greece	31	0.6	3	1.1	2	0.4	36	0.6
Hong Kong	87	1.6	1	0.4	44	9.3	132	2.1
India	106	2.0	8	3.0	37	7.8	151	2.5
Ireland	19	0.4	1	0.4	3	0.6	23	0.4
Israel	25	0.5	4	1.5	1	0.2	30	0.5
Italy	119	2.2	5	1.9	9	1.9	133	2.2
Japan	2242	41.2	29	10.8	106	22.3	2377	38.4
Korea	75	1.4	4	1.5	12	2.5	91	1.5
Malaysia	233	4.3	0	0	6	1.3	239	3.9
Mexico	15	0.3	14	5.2	16	3.4	45	0.7
Netherlands	77	1.4	19	7.1	7	1.5	103	1.7
New Zealand	27	0.5	3	1.1	0	0	30	0.5
Norway	40	0.7	3	1.1	7	1.5	50	0.8
Pakistan	28	0.5	0	0	2	0.4	30	0.5
Philippines	55	1.0	1	0.4	8	1.7	64	1.0
Portugal	20	0.4	1	0.4	3	0.6	24	0.4
Singapore	121	2.2	0	0	14	3.0	135	2.2
South Africa	66	1.2	6	2.2	20	4.2	92	1.5
Spain	81	1.5	5	1.9	4	0.8	90	1.5
Sweden	75	1.4	8	3.0	4	0.8	87	1.4
Switzerland	81	1.5	3	1.1	0	0	84	1.4
Taiwan	121	2.2	5	1.9	28	5.9	154	2.5
Thailand	97	1.8	0	0	10	2.1	107	1.7
Turkey	25	0.5	0	0	5	1.1	30	0.5
United Kingdom	606	11.1	58	21.6	39	8.2	703	11.3
Total	5454	100.0	269	100.0	475	100.0	6198	100.0

Table 2 (Continued)
Distributions by Country and Industry

Panel B: Sample firms by industry

Industry Group	Non cross-listed firms		Exchange listed firms (NYSE/AMEX /NASDAQ)		OTC/Rule144a/ Reg.S firms		Total	
	Number	%	Number	%	Number	%	Number	%
Agriculture & food	317	5.8	16	6.0	37	7.8	370	6.0
Mining & Construction	400	7.4	7	2.6	23	4.8	430	7.0
Textiles & Publishing	346	6.4	13	4.8	29	6.1	388	6.3
Chemicals	272	5.0	7	2.6	27	5.7	306	5.0
Pharmaceuticals	73	1.4	14	5.2	7	1.5	94	1.5
Extractive	71	1.3	15	5.6	8	1.7	94	1.5
Durable Manufacturers	1257	23.2	54	20.1	130	27.4	1441	23.4
Transportation	283	5.2	32	11.9	39	8.2	354	5.7
Utilities	127	2.3	18	6.7	16	3.4	161	2.6
Retail	728	13.4	18	6.7	35	7.4	781	12.7
Banking /Financial Svc.	1055	19.3	39	14.5	69	14.5	1163	18.8
Services	309	5.7	13	4.8	27	5.7	349	5.7
Computers	216	4.0	23	8.6	28	5.9	267	4.3
Total	5454	100.0	269	100.0	475	100.0	6198	100.0

Industry membership is determined by SIC code as follows: Agriculture & food (0100-0999 and 2000-2111), Mining & construction (1000-1999, excluding 1300-1399), Textiles & printing/publishing (2200-2799), Chemicals (2800-2824, 2840-2899), Pharmaceuticals (2830-2836), Extractive (2900-2999, 1300-1399), Durable manufacturers (3000-3999, excluding 3570-3579 and 3670-3679), Transportation (4000-4899), Utilities (4900-4999), Retail (5000-5999), Banking or financial services (6000-6999), Services (7000-8999 excluding 7370-7379), and Computers (7370-7379, 3570-3579, 3670-3679).

Table 3
Variable Definitions

<i>E_Law</i>	1 if the firm is from an English common law system country, and 0 otherwise;
<i>F_Law</i>	1 if the firm is from a French code law system country, and 0 otherwise;
<i>G_Law</i>	1 if the firm is from a German code law system country, and 0 otherwise;
<i>S_Law</i>	1 if the firm is from a Scandinavian code law system country, and 0 otherwise;
<i>Disclosure</i>	Index of Accounting disclosure level measured by the 1995 CIFAR. The index is created by examining and rating companies' annual reports for their inclusion and exclusion of 85 items and ranges from 0 to 100 and 100 as the highest standard;
<i>Jud_Efficiency</i>	Index of the efficiency and integrity of legal environment measured by Business International Corporation, LLSV (1998) and Doidge et al. (2004). It ranges from 1 to 10 with 10 as the highest level of efficiency;
<i>Anti_Director</i>	Index that aggregates six different shareholder rights and ranges in value from 0 to 6 with 6 as the highest level of protection for minority shareholders. Data is from LLSV (1998) and Doidge et al. (2004);
<i>Liquidity_R</i>	Liquidity of capital market in the country estimated by the ratio of the dollar value of shares traded by the average market capitalization in 1997. This information is from IFC Emerging Stock Markets Factbook 1998 and 1999;
<i>Log_GNP</i>	Log of GNP (1997) in billions of U.S. dollars in the country. Data is from IFC Emerging Stock Markets Factbook 1998 and 1999;
<i>Tobin's q</i>	$(\text{Total assets} - \text{Book equity} + \text{Market value of equity}) / \text{Total assets}$
<i>Low_Disclosure</i>	1 if the CIFAR index score of the firm's country of domicile is below the global median (i.e., 72.5), and 0 otherwise;
<i>NYSE_R</i>	1 if the firm meets the threshold size requirements for listing on the NYSE as of December 31, 2001. 0 otherwise;
<i>AMEX_R</i>	1 if the firm meets the threshold size requirements for listing on the AMEX as of December 31, 2000. 0 otherwise;
<i>NASDAQ_R</i>	1 if the firm meets the threshold size requirements for listing on the NASDAQ as of December 31, 2000. 0 otherwise;
<i>LIST_R</i>	Sum of NYSE_R, AMEX_R, and NASDAQ_R;
<i>Size</i>	Log of total assets in millions of U.S. dollars as of year 2000 end;
<i>Growth</i>	36-month change in total assets as of year 2000 end;
<i>ROA</i>	Return on assets (net income / average total assets) for year 2000;
<i>Cap_Intensity</i>	Capital intensity (fixed assets / total assets) as of year 2000 end;
<i>Capital Access</i>	Quantitative and qualitative measures of the ability of an entrepreneur to raise capital (developed by the Milken Institute Capital Studies Group)
<i>Leverage</i>	Financial leverage (total long-term debt / total assets) as of year 2000 end;
<i>Turnover</i>	Asset turnover (revenue / average total assets) for year 2000;
<i>Debt_Issue</i>	Change in the sum of short-term debt and long-term debt for year 2000;
<i>Equity_Issue</i>	Change in the common shares and share premium for year 2000;
<i>Global Industry q</i>	The global average of the industry median Tobin's q as of year 2000.

Table 4
Descriptive Statistics

Panel A: Description of country-level variables

<i>Country</i>	English law	French law	German law	Scandinavian law	Anti-Director rights	Judicial efficiency	Disclosure	Liquidity ratio	GNP
Argentina	0	1	0	0	4	6.00	68	0.50	319.3
Australia	1	0	0	0	4	10.00	80	0.52	382.7
Austria	0	0	1	0	2	9.50	62	0.71	225.4
Belgium	0	1	0	0	0	9.50	68	0.23	272.4
Brazil	0	1	0	0	3	5.75	56	0.86	784.0
Chile	0	1	0	0	5	7.25	78	0.11	70.5
Colombia	0	1	0	0	3	7.25	58	0.10	87.1
Denmark	0	0	0	1	2	10.00	75	0.57	184.4
Finland	0	0	0	1	3	10.00	83	0.53	127.4
France	0	1	0	0	3	8.00	78	0.64	1541.6
Germany	0	0	1	0	1	9.00	67	1.38	2321.0
Greece	0	1	0	0	2	7.00	61	0.73	122.4
Hong Kong	1	0	0	0	5	10.00	73	1.13	163.8
India	1	0	0	0	5	8.00	61	0.43	357.4
Ireland	1	0	0	0	4	8.75	81	0.83	65.1
Israel	1	0	0	0	3	10.00	74	0.26	94.4
Italy	0	1	0	0	1	6.75	66	0.66	95.4
Japan	0	0	1	0	4	10.00	71	0.46	4812.1
Korea	0	0	1	0	2	6.00	68	1.88	485.2
Malaysia	1	0	0	0	4	9.00	79	0.73	98.2
Mexico	0	1	0	0	1	6.00	71	0.38	348.6
Netherlands	0	1	0	0	2	10.00	74	0.67	403.1
New Zealand	1	0	0	0	4	10.00	80	0.38	59.5
Norway	0	0	0	1	4	10.00	75	0.75	159.0
Pakistan	1	0	0	0	5	5.00	73	1.06	64.6
Philippines	0	1	0	0	3	4.75	64	0.35	88.4
Portugal	0	1	0	0	3	5.50	56	0.66	109.5
Singapore	1	0	0	0	4	10.00	79	0.50	101.8
South Africa	1	0	0	0	5	6.00	79	0.19	130.2
Spain	0	1	0	0	4	6.25	72	1.70	569.6
Sweden	0	0	0	1	3	10.00	83	0.68	231.9
Switzerland	0	0	1	0	2	10.00	80	1.01	305.2
Taiwan	0	0	1	0	3	6.75	58	4.62	292.6
Thailand	1	0	0	0	2	3.25	66	0.38	165.8
Turkey	0	1	0	0	2	4.00	58	1.30	199.31
United Kingdom	1	0	0	0	5	10.00	85	0.44	1231.3

Table 4 (Continued)
Descriptive Statistics

Panel B: Comparison between cross-listed firms and non cross-listed firms

<i>Variables</i>	All sample firms (N=6,198)		Cross-listed firms (N=744)		Non cross-listed firms (N=5,454)		Test of Differences (cross-listed vs. non cross-listed)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
<i>E_Law</i>	0.296	0	0.386	0	0.283	0	***	+++
<i>F_Law</i>	0.170	0	0.269	0	0.157	0	***	+++
<i>G_Law</i>	0.492	0	0.300	0	0.519	1.000	***	+++
<i>S_Law</i>	0.042	0	0.046	0	0.042	0		
<i>Disclosure</i>	72.897	71.000	72.251	71.000	72.985	71.000	**	
<i>Jud_Efficiency</i>	9.042	10.000	8.538	10.000	9.110	10.000	***	+++
<i>Anti_Director</i>	3.611	4.000	3.613	4.000	3.611	4.000		
<i>Liquidity_R</i>	0.703	0.460	0.799	0.460	0.690	0.460	***	
<i>Log_GNP</i>	6.923	7.116	6.385	5.999	7.000	7.341	***	+++
<i>Size</i>	6.596	6.258	8.026	8.150	6.401	6.095	***	+++
<i>Growth</i>	0.251	0.100	0.341	0.173	0.239	0.095	***	+++
<i>ROA</i>	0.026	0.018	0.038	0.030	0.024	0.017	***	+++
<i>Cap_Intensity</i>	0.292	0.270	0.319	0.297	0.289	0.268	***	+++
<i>Leverage</i>	0.133	0.102	0.169	0.147	0.128	0.095	***	+++
<i>Turnover</i>	0.824	0.766	0.732	0.686	0.836	0.777	***	+++
<i>Debt_Issue</i>	0.111	0.001	0.209	0.037	0.098	-0.001	***	+++
<i>Equity_Issue</i>	0.045	0	0.077	0.002	0.040	0	***	+++

***, **, * Difference between means is significant at the 0.01, 0.05, and 0.1 level, respectively.

+++, ++, + Difference between medians using Wilcoxon rank-sum scores is significant at the 0.01, 0.05, and 0.1 level, respectively

Table 4 (Continued)
Descriptive Statistics

Panel C: Comparison between exchange-listed firms and non exchange-listed firms

<i>Variables</i>	All cross-listed firms (N=744)		Exchange-listed firms (N=269)		Non exchange-listed firms (N=475)		Test of Differences (exchange-listed vs. non exchange-listed)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
<i>E_Law</i>	0.386	0	0.338	0	0.413	0	**	++
<i>F_Law</i>	0.269	0	0.398	0	0.196	0	***	+++
<i>G_Law</i>	0.300	0	0.193	0	0.360	0	***	+++
<i>S_Law</i>	0.046	0	0.071	0	0.032	0	**	++
<i>Disclosure</i>	72.251	71.000	74.669	75.000	70.882	71.000	**	+++
<i>Jud_Efficiency</i>	8.538	10.000	8.624	10.000	8.489	10.000		
<i>Anti_Director</i>	3.613	4.000	3.520	4.000	3.665	4.000		
<i>Liquidity_R</i>	0.799	0.460	0.660	0.460	0.877	0.460	***	++
<i>Log_GNP</i>	6.385	5.999	6.403	6.345	6.375	5.879		
<i>Listing_R</i>	1.914	2.000	2.275	3.000	1.709	2.000	***	+++
<i>NYSE_R</i>	0.737	1.000	0.777	1.000	0.714	1.000	*	+
<i>AMEX_R</i>	0.636	1.000	0.788	1.000	0.549	1.000	***	+++
<i>NASDAQ_R</i>	0.542	1.000	0.710	1.000	0.446	0	***	+++
<i>Size</i>	8.026	8.150	8.444	8.704	7.790	7.840	***	+++
<i>Growth</i>	0.341	0.173	0.433	0.223	0.289	0.136	**	+
<i>ROA</i>	0.038	0.030	0.043	0.038	0.035	0.027	**	++
<i>Cap_Intensity</i>	0.319	0.297	0.312	0.267	0.323	0.309		
<i>Leverage</i>	0.169	0.147	0.173	0.152	0.166	0.146		
<i>Turnover</i>	0.732	0.686	0.702	0.641	0.750	0.717		
<i>Debt_Issue</i>	0.209	0.037	0.249	0.084	0.186	0.025		
<i>Equity_Issue</i>	0.077	0.002	0.124	0.018	0.050	0.001	***	+++

***, **, * Difference between means is significant at the 0.01, 0.05, and 0.1 level, respectively.

+++, ++, + Difference between medians using Wilcoxon rank-sum scores is significant at the 0.01, 0.05, and 0.1 level, respectively

Table 5
Pooled Logit Regressions of Cross-Listing
(N=6,198)

<i>Variables</i>	Logit models			
	(1) Coeff. (Chi-sq)	(2) Coeff. (Chi-sq)	(3) Coeff. (Chi-sq)	(4) Coeff. (Chi-sq)
<i>Intercept</i>	1.420*** (9.64)	-3.410*** (34.23)	-3.891*** (45.04)	-3.298*** (24.60)
<i>F_Law</i>	-0.046 (0.13)	-0.527*** (10.50)		-0.641*** (14.02)
<i>G_Law</i>	-1.211*** (125.28)	-1.857*** (91.36)		-1.958*** (92.49)
<i>S_Law</i>	-0.150 (0.58)	-0.496** (5.20)		-0.828*** (12.78)
<i>Disclosure</i>	-0.045*** (38.25)	-0.062*** (55.13)	-0.028*** (12.76)	-0.063*** (52.60)
<i>Investor_rights_factor</i>	0.058 (1.43)	0.173*** (8.06)	0.193*** (13.74)	0.179*** (7.87)
<i>Liquidity_R</i>		0.187*** (8.53)	-0.037 (0.39)	0.123* (3.35)
<i>Log_GNP</i>		-0.016 (0.08)	-0.405*** (136.91)	-0.142** (5.53)
<i>Size</i>		0.795*** (675.77)	0.766*** (671.04)	1.083*** (714.63)
<i>Cap_Intensity</i>				-0.086 (0.09)
<i>Leverage</i>				0.143 (0.13)
<i>Turnover</i>				0.012 (0.01)
<i>Debt_Issue</i>				0.057 (0.51)
<i>Equity_Issue</i>				0.072 (0.16)
<i>Industry</i>				Included
Pseudo R²	0.056	0.291	0.262	0.380

The dependent variable in these regressions is *XLIST*, an indicator variable that takes the value of one if the firm cross-lists in the United States, and zero otherwise. ***, **, * indicate that the coefficient is significant at the 0.01, 0.05, and 0.1 level, respectively. Refer to Table 3 for variable definitions.

Table 6
Pooled Logit Regressions of Exchange-Listing
(N=744)

<i>Variables</i>	Logit models				
	(1) Coeff. (Chi-sq)	(2) Coeff. (Chi-sq)	(3) Coeff. (Chi-sq)	(4) Coeff. (Chi-sq)	(5) Coeff. (Chi-sq)
<i>Intercept</i>	-7.707*** (54.70)	-9.686*** (59.38)	-9.182*** (54.06)	-8.186*** (34.46)	-8.075*** (32.89)
<i>F_Law</i>	1.806*** (39.92)	1.527*** (23.12)	1.507*** (22.19)	1.726*** (26.88)	1.708*** (25.79)
<i>G_Law</i>	0.394 (2.58)	-0.316 (0.76)	-0.254 (0.48)	-0.202 (0.28)	-0.190 (0.25)
<i>S_Law</i>	0.892** (5.62)	0.893** (5.20)	0.572 (2.05)	0.624 (2.18)	0.398 (0.85)
<i>Disclosure</i>	0.083*** (31.05)	0.071*** (19.31)	0.067*** (18.03)	0.075*** (19.56)	0.080*** (21.47)
<i>Investor_rights_factor</i>	0.071 (0.46)	0.008 (0.01)	0.027 (0.05)	-0.001 (0.01)	-0.004 (0.01)
<i>Liquidity_R</i>		0.127 (0.76)	0.127 (0.70)	-0.077 (0.23)	-0.015 (0.01)
<i>Log_GNP</i>		0.125 (1.47)	0.065 (0.39)	0.064 (0.31)	-0.019 (0.02)
<i>Listing_R</i>			0.323*** (13.69)	0.299*** (9.89)	
<i>NYSE_R</i>					-0.234 (1.01)
<i>AMEX_R</i>					0.378 (1.32)
<i>NASDAQ_R</i>					0.595* (3.73)
<i>Size</i>		0.323*** (23.98)	0.246*** (12.70)	0.284*** (11.90)	0.299*** (12.96)
<i>Cap_Intensity</i>				-0.001 (0.01)	0.191 (0.13)
<i>Leverage</i>				0.498 (0.39)	0.401 (0.25)
<i>Turnover</i>				-0.201 (0.72)	-0.148 (0.38)
<i>Debt_Issue</i>				-0.003 (0.01)	-0.004 (0.01)
<i>Equity_Issue</i>				0.603* (3.65)	0.536* (2.83)
<i>Industry</i>				Included	Included
Pseudo R²	0.179	0.225	0.246	0.326	0.335

The dependent variable in these regressions is *ORG_EXC_XLIST*, an indicator variable that takes the value of one if the firm cross-lists on an organized exchange in the United States, and zero otherwise. ***, **, * indicate that the coefficient is significant at the 0.01, 0.05, and 0.1 level, respectively. Refer to Table 3 for variable definitions.

Table 7
Weighted Logit Regressions of Cross-Listing and Exchange-Listing

<i>Variables</i>	Cross-Listing Regression (N=6,198)		Exchange-Listing Regression (N=744)	
	(1) Coeff. (Chi-sq)	(2) Coeff. (Chi-sq)	(3) Coeff. (Chi-sq)	(4) Coeff. (Chi-sq)
<i>Intercept</i>	-4.456*** (95.17)	-4.999*** (84.67)	-11.184*** (49.64)	-11.335*** (49.18)
<i>F_Law</i>	-0.088 (0.60)	-0.150 (1.58)	2.988*** (61.93)	3.099*** (61.66)
<i>G_Law</i>	-1.075*** (44.08)	-1.177*** (48.12)	1.837*** (18.47)	1.845*** (17.99)
<i>S_Law</i>	-0.461 (0.88)	-0.646*** (20.13)	0.542* (2.72)	0.232 (0.45)
<i>Disclosure</i>	-0.026*** (18.56)	-0.033*** (26.97)	0.110*** (37.55)	0.123*** (43.06)
<i>Investor_rights_factor</i>	0.063** (2.22)	0.096** (4.71)	0.411*** (9.49)	0.412*** (8.98)
<i>Liquidity_R</i>	0.020 (0.11)	-0.012 (0.04)	-0.456** (4.55)	-0.382* (2.96)
<i>Log_GNP</i>	0.058 (1.88)	-0.012 (0.07)	-0.269** (5.22)	-0.383*** (9.40)
<i>Listing_R</i>			0.379*** (12.56)	
<i>NYSE_R</i>				-0.463* (3.24)
<i>AMEX_R</i>				0.797** (4.57)
<i>NASDAQ_R</i>				0.513 (1.96)
<i>Size</i>	0.618*** (617.72)	0.853*** (699.54)	0.295*** (11.62)	0.311*** (12.62)
<i>Cap_Intensity</i>		0.959*** (19.24)	0.009 (0.01)	0.221 (0.15)
<i>Leverage</i>		0.280 (0.76)	1.113 (1.83)	1.090 (1.71)
<i>Turnover</i>		0.213** (5.57)	-0.146 (0.31)	-0.032 (0.01)
<i>Debt_Issue</i>		-0.184*** (8.08)	-0.289* (3.23)	-0.290* (3.21)
<i>Equity_Issue</i>		0.132 (0.98)	0.974*** (8.86)	0.929*** (7.89)
<i>Industry</i>		Included	Included	Included
Pseudo R²	0.194	0.283	0.419	0.434

In the cross-listing regression, the dependent variable in these regressions is *XLIST*, an indicator variable that takes the value of one if the firm cross-lists in the United States, and zero otherwise. In the exchange-listing regression, the dependent variable is *ORG_EXC_XLIST*, an indicator variable that takes the value of one if the firm cross-lists on an organized exchange in the United States, and zero otherwise. ***, **, * indicate that the coefficient is significant at the 0.01, 0.05, and 0.1 level, respectively. Refer to Table 3 for variable definitions.

Table 8
Valuation Impact of Cross-listing and Exchange-listing
(N=6,198, Dependent Variable: Tobin's q)

<i>Variables</i>	OLS		2SLS		
	(1) Coeff. (t-stat)	(1) Coeff. (t-stat)	(2) Coeff. (t-stat)	(3) Coeff. (t-stat)	(4) Coeff. (t-stat)
<i>Intercept</i>	-0.095 (-1.41)	-0.106 (-1.56)	-0.106 (-1.55)	-0.098 (-1.45)	-0.103 (-1.53)
<i>XLIST</i>	0.138*** (3.61)	0.279*** (7.17)	0.334*** (6.06)	0.161*** (3.85)	0.134*** (2.23)
<i>ORG_EXC_XLIST</i>	0.283*** (5.24)			0.255*** (7.47)	0.369*** (8.19)
<i>Low_Disclosure</i>	-0.022 (-1.49)	-0.039*** (-2.77)	-0.027 (-1.57)	-0.035** (-2.47)	-0.029* (-1.76)
<i>XLIST × Low_Disclosure</i>	-0.082* (-1.66)		-0.109 (-1.41)		0.055 (0.66)
<i>ORG_EXC_XLIST × Low_Disclosure</i>	-0.178** (-2.29)				-0.273*** (-3.96)
<i>Investor_rights_factor</i>	0.009 (1.48)	0.013** (2.11)	0.012* (1.84)	0.014** (2.23)	0.013** (2.06)
<i>Liquidity_R</i>	-0.043*** (-4.42)	-0.047*** (-4.85)	-0.047*** (-4.79)	-0.044*** (-4.46)	-0.044*** (-4.48)
<i>Growth</i>	0.098*** (9.95)	0.095*** (9.58)	0.096*** (9.63)	0.096*** (9.61)	0.096*** (9.68)
<i>ROA</i>	3.980*** (26.24)	3.992*** (26.23)	4.000*** (26.27)	3.960*** (26.13)	3.983*** (26.28)
<i>Global Industry q</i>	1.074*** (20.89)	1.062*** (20.43)	1.063*** (20.45)	1.049*** (20.26)	1.054*** (20.39)
R²	0.238	0.229	0.229	0.236	0.238

The dependent variable in these regressions is Tobin's q. *XLIST* is an indicator variable that takes the value of one if the firm cross-lists in the United States, and zero otherwise. *ORG_EXC_XLIST* is an indicator variable that takes the value of one if the firm cross-lists on an organized exchange in the United States, and zero otherwise. ***, **, * indicate that the coefficient is significant at the 0.01, 0.05, and 0.1 level, respectively. Refer to Table 3 for variable definitions.